Remarks

Reconsideration and allowance of all pending claims are respectfully requested. Claims 1-4, 6-14, 16-25 & 27-34 remain pending. Of these claims, applicants gratefully acknowledge the indication of allowance of claims 8, 9, 18, 19, 29 & 30.

Substantially, claims 1-4, 6-7, 10-14, 16-17, 20-25, 27-28 & 31-34 stand rejected under 35 U.S.C. 103 (a) as being patentable over Ellsworth et al. (U.S. Patent No. 6,453,344; hereinafter "Ellsworth") in view of Luke (U.S. Patent No. 5,168,554) and further in view of Zalewski et al. (U.S. Patent No. 6,260,068; hereinafter "Zalewski"). This rejection is respectfully, traversed and reconsideration thereof is requested.

An "obviousness" determination requires an evaluation of whether the prior art taken as a whole would suggest the claimed invention taken as a whole to one of ordinary skill in the art. In evaluating claimed subject matter as a whole, the Federal Circuit has expressly mandated that functional claim language be considered in evaluating a claim relative to the prior art. Applicants respectfully submit that the application of these standards to the independent claims presented leads to the conclusion that the recited subject matter would not have been obvious to one of ordinary skill in the art based upon the applied patents.

In one aspect (i.e., claim 1), applicants present a method of managing logical processors of a computing environment. This method includes: configuring a logical partition of a computing environment with one or more logical processors; automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted; and dynamically adjusting the configuration of the logical partition. In applicants' claimed invention, the determination of whether the logical partition is to be dynamically adjusted is automatic and is based on an automatic evaluation of the workload of the partition. This is very different from the teachings of Ellsworth, Luke and Zalewski, either alone or in combination.

Ellsworth describes a system in which the total number of available CPUs of the system are partitioned into one or more smaller pools of CPUs, such that a smaller pool contains the CPUs actually used by a user. This reduces the licensing costs of the system, since the user only

pays fees for the CPUs of the pool, instead of paying fees for all available CPUs of the system. At a later time, the user may request additional CPUs to be added to the pool. That is, the user may request additional CPUs, if the user determines that more CPUs are desired and is willing to pay for these additional CPUs. Thus, in Ellsworth, any adjustment in the configuration is user determined and requested, and is not automatically determined based on an automatic evaluation as claimed by applicants.

In particular, applicants submit that Ellsworth does not teach or suggest applicants' claimed element of automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted. Instead, Ellsworth describes a manual process of reconfiguring an environment. That is, the user chooses whether the configuration is to be adjusted. This is specifically described throughout Ellsworth. As examples, in Col. 4, lines 1-2, it states: "[T]he user of the multiprocessor system 1-0 is able to establish domains ..." and in Col. 10, lines 4-15, it indicates that the customer may wish to change the number of off-line processors or the number of dedicated CPUs. Further, the examples of Cols. 10-11 recite that the user upgrades the machine and the user edits the profiles. Each of these examples, teaches that the determination to reconfigure is made by the user and the reconfiguration is at the user's request. It is not automatically determined based on an automatic evaluation, as claimed by applicants.

This deficiency of Ellsworth is recognized in the Office Action, which states that Ellsworth: "... does not show the automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted." The Office Action relies upon Luke for this feature. However, applicants respectfully submit that Luke also fails to teach or suggest at least this feature of their claimed invention.

Luke describes a computer implemented method by which trace data from concurrently executing virtual processors is reformatted and organized as a linked list of successive events evoking parallel activity for any given parallel task. A selective traverse of the links operates to drive time processed displays of processor utilization and executing hierarchy of parallel constructs. It is an object of Luke to devise a computer implemented method for analyzing the

functional events occurring during parallel execution of a program to drive parallel process summary variables, parallel activity duration, and concurrency variables.

The final Office Action cites column 3, lines 65-68 of Luke for allegedly teaching "automatically evaluating resource utilization and parallelism with respect to the virtual processors for the purpose of computing the effective number of processors to be used." This characterization of the teachings of Luke is respectfully traversed. Column 3, lines 64-68 of Luke state:

> It is accordingly an object of this invention to devise a computer-implemented method for evaluating resource utilization and parallelism with respect to computations executing concurrently on one or more virtual processors.

These lines of Luke discuss a goal of his invention as being evaluating resource utilization and parallelism with respect to computations executing concurrently. Thus, Luke seeks to evaluate the requirements of the computations (or program) itself executing concurrently under one or more virtual processors. This goal of Luke does not state as a goal the automatic evaluating of workload of the one or more processors, nor the automatic determination therefrom that configuration of the one or more virtual processors is to be adjusted. As summarized above, the purpose of Luke is to improve the efficiency of a program to be executed in parallel. This is accomplished by injecting trace points and then evaluating the trace point data (see column 4, lines 31-43).

In addition to there being no teaching or suggestion in Luke of applicants' recited functionality of automatically evaluating workload of the logical partition, applicants' respectfully submit that there is no teaching or suggestion therein of the further recited functionality of automatically determining therefrom that configuration of the logical partition is to be adjusted. The Office Action fails to address this aspect of applicants' recited invention.

Further, a careful reading of Ellsworth, Luke and Zalewski fails to uncover any teaching or suggestion of functionality for automatically determining, from an automatic evaluation of workload of a logical partition, that configuration of the logical partition is to be adjusted. Because this aspect of applicants' process is not taught or suggested in the applied patents, nor

specifically addressed in the Office Action, applicants respectfully submit that a prima facie case of obviousness of their independent claims is not stated in the Office Action.

The final Office Action further states that Zalewski teaches the dynamic reconfiguration of a multi-processor computer system without intervention of the system administrator (Col. 4, lines 50-53, "In accordance with ... of the system administrator"). However, applicants respectfully submit that a careful reading of Zalewski fails to uncover any discussion or suggestion that the workload of the logical partition is automatically evaluated and that based upon this automatic evaluation, there is a automatic determination that configuration of logical partition is to be adjusted.

Col. 4, lines 50-53 of Zalewski state:

> In accordance with the principles of the invention, the migration can be initiated and carried out under control of the operating system instance "on the fly" without intervention of the system administrator.

The term "system administrator" in Zalewski appears to be an individual acting in a hardware administrator role, i.e., as an operator at a hardware console to set up and reconfigure a machine. Col. 7, lines 46-49 of Zalewski, state: "For example, a partition may be uninitialized due to a lack of sufficient resources at power up to run a primary CPU or when a system administrator is reconfiguring the computer system." This context implies a hardware console operation role for the system administrator since the partition is not initialized and cannot perform anything. Col. 29, lines 4-6 state: "This migration may take place under control of a system administrator or may be initiated by an operating instance without system administrator participation." Applicants respectfully submit that this sentence implies a delineation between the hardware role of the system administrator and a software (operating system instance) role.

A careful reading of Zalewski fails to uncover any suggestion or implication for workload driven automation of a reconfiguration of resources as recited by applicants.

Col. 4, lines 60-62 of Zalewski further state:

> In accordance with this model, a first operating system instance which requires a resource first requests the resource from the second instance.

A careful reading of Zalewski fails to uncover any suggestion that the requirement for a resource is in any way related to an automatic evaluation of workload of a logical partition or an automatic determination therefrom that configuration of the logical partition is to be adjusted. Absent such teaching, applicants respectfully submit that there is no suggestion in the applied art of the recited technique for managing logical processors of a computing environment. To the extent that a resource can migrate from one partition to another in Zalewski, without system administrator intervention, could simply be the result of a command being executed by one of the instances. There is no suggestion that migration results from an automatic evaluation of workload of an instance.

Based on the foregoing, applicants respectfully request reconsideration and withdrawal of the rejection stated in the final Office Action. In addition to the substantive traversal of the rejection, applicants also respectfully submit that the justifications in the Office Action for combining Ellsworth, Luke and Zalewski are deficient. The Office Action alleges that it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Luke with the logical processors of Ellsworth because "it would provide for the purpose of computing the effective number of processors to be used for processing a task" (a characterization which applicants traverse). Further, the Office Action alleges that it would have been obvious to one of ordinary skill in the art at the time of the invention was made to incorporate the "automatic configuration of Zalewski with the system of Ellsworth and Luke because it would provide for the purpose of reconfiguring the resource partitions without rebooting the whole system" (again, a characterization which applicants traverse to the extent relevant to their recited workload driven automation of the reconfiguration of the logical partition). Noticeably absent from these justifications as any express teaching, suggestion or incentive identified in the art itself for making the proposed combination. Just as in Winner International Royalty Corp. v. Wang, 48 U.S.P.Q. 2d 1139, 1144 (D.C., 1998), wherein the Court overturned a Board finding of obviousness, hindsight is always perfect and it is insufficient to prove at the time of the claimed invention that the separate elements of the process were present in the know art. "Rather, there must have been some explicit teaching or suggestive in the art to

motivate one of ordinary skill in the art to combine such elements so as to create the same invention." Id. Winner's cited authority, Arkie Loures, Inc. v. Gene Larew Tackle, Inc., 43 U.S.P. 2d 1294, 1297 (F. Cir., 1997), similarly holds that:

> It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art, to combine the elements.

The above justifications do not identify a teaching, suggestion or incentive in the art to combine the references as required by cases like Winner and Arkie. The justifications for the two combinations are simply restatements of the alleged results of the combination, rather than a reason for the combination drawn from the prior art or from the knowledge available to one of ordinary skill in the art.

Upon a review of Ellsworth, Luke and Zalewski, applicants respectfully submit that there is no teaching, suggestion or incentive for the combination. In fact, as discussed above in detail, the teachings of each are believed deficient with respect to applicants recited processing of automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted. Since the justifications offered in the final Office Action provide no technical basis outside that contained in applicants' own specification, it merely attempts to restate the combination in hindsight, which violates the well known principle that applicants own disclosure cannot be used as a reference against them. The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that the claimed invention should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. Both the suggestion and the expectation of success must be found in the prior art, not in applicants disclosure.

For the above reasons, applicants request reconsideration and withdrawal of the rejection stated in the final Office Action. The dependent claims are believed allowable for the same reasons discussed above, as well as for their own additional characterizations. All claims are believed to be in condition for allowance and such action is respectfully requested.

Applicants invite the Examiner to contact their representative at the below-listed number, should the Examiner wish to discuss this application further.

Respectfully submitted,

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